A RESEARCHER VIEWS THE FOOD INDUSTRY IN THE 1980'S

by

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My assignment on this afternoon's program is to react to earlier presentations and to blend the thoughts from those presentations with some perspectives that I have regarding research needs for the 1980's. As is often the case with me, I accepted this assignment with enthusiasm but as this date approached, the level of trepidation has mounted. The trepidation largely stemmed from uncertainty concerning the content of the presentations to which I am expected to react. As a defense against rising panic, I have resorted to the preparation of a formal paper that can be abridged if I do have contributions relating to earlier presentations and drawn out if I feel that I have little to add to what others have said.

In my remarks, I will first provide some assessment of the situation with regard to the food industry. The specific focus of that assessment will be on economics and efficiency. I shall not include farm level marketing. Secondly, I will discuss some of the dimensions of research on food industry problems and economics of the food delivery system. Emphasis will be placed on the direction and role of publicly funded research. Thirdly, I will identify what I believe to be some of the priority problems for economic research related to the food industry in the 1980's. Finally, if time permits, I will comment on the problems of funding and support for food marketing research in the Departments of Agricultural Economics in the Land Grant Universities.

Economic Efficiency in the Food Industry

Over the period from 1972 through 1981 food prices (both at home and away from home) increased at an average annual rate of 13.6%. At the same time, the Consumer Price Index for non-food items increased by 12.8% per year.[1] Thus, food prices have increased more rapidly than non-food items.

At the same time, the marketing bill for food has increased as a proportion of total food expenditures. Consumer expenditures for U.S. farm foods rose $154 billion from 1970 to 1980. Of this increase 70 percent was due to increased marketing costs while only 30 percent was accounted for by higher farm level prices.[2]

The index of food marketing costs rose 81.5 points from 1979 through the second quarter of 1982. In somewhat more specific terms, the farm to retail price spread on beef increased by about 15¢ per pound and on pork increased by about 4¢ per pound over the same period.[3] By 1981 about 65¢ of the consumer's food dollar represented costs of marketing services.

The reasons for the increases in marketing costs in both absolute and relative terms can be rationalized. Labor costs account for nearly 50% of food marketing costs. Collective bargaining agreements and cost-of-living adjustments tend to escalate the wage bill with inflations. While the index of food marketing costs rose by 81.5 points from 1979 through June 1982,

the index of transportation services rose by 120.1 points and the index for fuel and power rose an astounding 263.7 points.[4] Transportation is estimated to contribute 8% of the farm-food marketing bill and fuel and power, 5%.[5]

Increases in input costs can be offset by increases in productivity. For example, farm productivity in terms of output per man-hour grew at an annual rate of 5.5% in the 1970's. However, the food marketing system has not performed well in increasing productivity. Output per hour of labor in retail food stores is below 1973 levels.[6] Eddleman, et al., examined labor productivity growth rates over the period 1958-72 and compared them to the period 1973-79. Relative productivity declines were noted in 10 of 12 food manufacturing industries. Declines in rates of productivity were also noted for all of the distribution sectors including transportation, food retailing, and eating and drinking places. For food retailing and restaurants, output per man-hour actually decreased over the period 1973-79 as compared to 1958-72.[7]

The dynamics of change for American industry spawned by the microchip are such that the productivity measures mentioned above may no longer apply to the retail food sector. I refer here to the advent of the "scanner" cash register which must have a positive effect on labor productivity in the supermarket.

In brief summary, it can be said that: 1) food costs have risen more rapidly than non-food costs over the past decade, 2) marketing costs as a proportion of total food costs have increased over the past decade, 3) labor and energy related costs are responsible for much of the increase in marketing costs, and 4) labor productivity in the food marketing sectors has declined in recent years as compared to earlier periods. Coupled with these changes have been changes in the structure of the food marketing industry which have implications for marketing efficiency. I shall not dwell upon those here.

Dimensions of Research in the Economics of Food Marketing

The purpose of marketing research is to provide information useful to decision makers in both the private and public sectors. Thus, it encompasses research on subjects and topics useful primarily to the managers and executives in the firms that comprise the industry and also research useful to government policymakers. An implicit objective in marketing research is the identification of "Pareto-better" alternatives.

A USDA working paper (which is not to be cited) suggests that marketing research could be organized into the following categories:

1. Marketing Firm Adjustments
2. Analysis of Changes in Technology
3. Supply and Demand Analysis
4. Analyses of Changes in Institutional Arrangements
5. Studies of Industry Adjustment
6. Economic Efficiency and Public Policy

While these categories have obvious interdependencies they provide a useful framework for organizing research. The same uncited paper outlines two approaches to studying marketing problems. They are the "Structural Approach" and the "Systems Approach." In general, the former is "descriptive," "inductive" and "projective" while the latter is characterized by "modeling," "simulation" and "deduction." Both approaches are useful.

As public policy is influenced by research results, research activity and direction is influenced by public policy. Current economic conditions, political persuasions, and prioritization processes all have effects upon the publicly supported research establishment. At the same time, national policy established by the Congress and Executive branch of government affects the food industry. That is, a spectrum of research issues is generated by the need for information for public policy formation and, in turn, by the results of legislative and regulatory activity.

Illustrative of this point is the fact that the current administration is in the process of effecting policy changes with respect to taxes, spending, international trade, interest rates and regulatory agencies. This creates a need on both a macro and micro-economic level to analyze the impact of such changes. More directly, the business environment has changed and is in change resulting in a need for research on adjustments that firms must make.

Another point of some relevance to the research establishment is that of directions established by Federal research funding. Reductions in funding for certain programs of NSF, EPA, Energy and other areas are well publicized. Within the USDA we also see evidence of administrative "shaping" of research through identification of priorities and funding. Observation of the USDA budgets for 1982 and 1983 and the preliminary budgets for 1984 gives some indication of research priorities at the national level.

First, at the gross level, research approrpriations for all USDA agencies in 1982 totaled $1.165 billion. Of this total $40 million was budgeted for food systems processing, marketing, and distribution research (excluding non-food systems, food quality and safety, and human nutrition). This constitutes 3.4% of USDA research funding. Of the $40 million the Economic Research Service (ERS) received $2.9 million, and the Cooperative State Research Service (representing the university research system) received $10.9 million.

The ESCOP (Experiment Station Committee on Policy) 1983 Budget Proposal requested a total of $94 million for federal research funding. Of this total, $3.4 million of increased funding was requested for research in "Processing, Marketing, Conservation and Consumption." It may be instructive to provide an outline of the subcategories under this heading:

a.	Nutritional value, quality and safety of processed foods	$2.0 million
b.	Reduced food, fiber and wood produce losses	0.3 million
c.	Consumer demand for foods, fibers and wood products	1.1 million
	TOTAL	$3.4 million

Another important category is Energy Conservation and Efficiency. The subcategories and funding levels recommended there were:

a.	Energy conservation and efficiency in the production, processing, distribution and consumption of food and fiber products	$3.5 million
b.	Energy conservation and efficiency in interregional competition	1.5 million
c.	Alternative energy sources	2.5 million
	TOTAL	$7.5 million

A third category relating to food marketing is that of Agricultural Policy. Under that heading it was recommended that funding of $1 million be provided for study of transportation networks serving agriculture and forestry, $1.5 million for research on enhancing exports, and $0.5 million for analysis of effects of government policy on agriculture.

It is, of course, somewhat difficult to perceive from these category headings just what is included but it does seem clear that research on efficiency in the food marketing system does not occupy a high ranking in this budget. Those areas that have been given high priorities are research on basic biological mechanisms and increased productivity of crops, animals and land.

From my observations this past year, the following directions seem to be apparent in the near future for publicly supported research in the USDA and Land Grant system.

Basic or "fundamental" research will be favored over applied types.

Emphasis will be placed on research that will result in expanded output in the long term.

Increasing attention will be given to the development and maintenance of foreign markets for food and fiber products.

There will be less attention given to consumer issues.

There will be less concern with market structure and matters of concentration.

There is likely to be less interest in regulation of the industry to accomplish social goals.

There will be more emphasis on post harvest physiology and food technology.

There will be less interest in efficiency research, marketing margins, services, competition, etc.

However, as I mentioned earlier, research directions are influenced in part by public funding and public funding is affected by priorities at the Federal level which are in turn influenced by economic conditions and political persuasion. Thus, these research signals are subject to change.

Priority Areas for Marketing Research in the 1980's

Projecting research needs into the future is largely based on one's perceptions of problems that are current and emerging today. Forecasting the problems that may confront us by 1989 or 1990 requires a better crystal ball than the one I have. Nevertheless, it is certain that some of the issues of the early 1980's will persist through the late 1980's.

In the few following paragraphs, my focus will be on the broad subject matter area of marketing. I acknowledge the influence and intellectual stimulus provided by the paper presented by Leo Polopolus this past summer. In fact, it may be useful to provide a quote from that paper as a point of departure.

> "Productivity growth and marketing efficiency require increased attention in such areas as post harvest handling, processing, raw product assembly, transportation at various stages, wholesaling, storage, retailing, food service, exporting, importing, and pricing at all levels. The new age of computer technologies also provides unlimited opportunities for improving product and input market information and thereby pricing and marketing efficiencies. Recent developments in demand theory and household economics are quite relevant to an overall evaluation of alternative food systems from the consumer perspective."[8]

Leo's laundry list of needed research cannot be faulted since it does identify the broad spectrum of research needed for advances in marketing efficiency. My priority list of challenges will be shorter and focused on problems or issues that I think must be dealt with by marketing researchers. The nature of each of these challenges will be described only briefly.

1. The microchip miracle--Most of us have had familiarity with the computer over the past 30 years. Economists were among the first to recognize and utilize the capabilities of the computer for research. In fact, the computer has enabled the development of increasingly detailed models of sectors as well as the national economy. The computer has also been widely adopted for accounting procedures. However, in the last five years,

progress in computer technology has made a great leap forward with the development of low cost microchips. This has led to miniaturization and significant cost reductions. Data storage and retrieval, sending and receiving information, and analytical procedures made possible by this technology are not available to even the smallest firms or private individuals. The challenges to research lie in the development of models for firm operations on a more micro level than has ever been considered before, the potential efficienceis resulting from better information, and the applications of analytic procedures for decision making by firm managers.

2. Living with oligops--Concentration in the food industry is well documented. Conglomerates and multinationals are everywhere. Firm or corporate goals may be subordinate to those of money managers, complex contractual arrangements, tax tradeoffs, etc. Concepts of economic efficiency based on the model of small, independent, highly competitive firms quite likely no longer applies. As anyone who has taught microeconomics is aware, the theory descriptive of oligopoly and oligopsony leaves one unsatisfied and applications involving game theory assume substantial complexity. Nevertheless, work of the type represented by the efforts of those associated with NC-117 needs to be continued and expanded so that we understand the nature of, and consequences associated with, the changing structure of the food industry.

3. Labor efficiency--Nearly 50% of food marketing costs are associated with the labor bill and this proportion has been rising slowly over time. As was mentioned earlier, productivity per worker has not increased at the same rate as in the production sector. Part of the reason for this situation has been the unionization of food industry workers and contract provisions. Another reason is the increased amount of services provided with food. Still another is the alleged highly competitive environment in the retail sector that has led to later hours (and indeed, 24 hour stores in some markets) when the added sales fail to cover the added costs. Research is needed to continually seek ways of enhancing labor efficiency. Economists and engineers can work together in the design and evaluation of new systems for handling goods with the objective of increasing efficiency. Leo's list contained in the quotation at the beginning of this section says it all.

4. Economics of food technology--Related to food marketing costs and labor efficiency is the science of food technology which I define rather broadly as including processing technology, new product development, and packaging. There is little question that food technology research has had a profound impact on the food industry over the last two decades. Much of this research has resulted in new processes that preserve or enhance the quality of foods reaching the consumer. New products have been developed and introduced and many have not passed the test of consumer acceptance. Better packaging technology has reduced damage and spoilage while often enhancing the appearance of the product. Unfortunately, it is my perception that a great deal of the work in food technology has not been subjected to a rigorous economic analysis. Further, it is obvious that the primary criteria for new product R&D is that of product profitability and not increased efficiency. While the two criteria are not necessarily incompatible, in an oligopolistic environment less attention is given to efficiency. Thus, I believe that marketing economists should concern themselves more with the economic analysis of the various dimensions of food technology.

5. Transportation--If there is one most critical element in the food marketing system, it must be transportation. Among the transportation modes, truck transport ranks first. Rail transport is dependent upon the rail network and

the efficiency of that system. Truck transport is dependent upon the highway network and the efficiency of the trucking industry. We have seen an era characterized by increasing efficiency in truck transport enabled in part by low energy costs (until recently) and in part by massive public investment in a national highway system. Unfortunately, we begin this decade in a time of economic recession and at a point where substantial public investments are needed to maintain the highway and bridge systems in the nation. As you know, if you have driven off the interstates, the US and state highways are rapidly deteriorating. It seems that economic analysis is needed that will identify the losses in efficiency and services that are the result of this deterioration. These costs are borne by both private firms and the general public as they affect the prices of food. Public decision makers must be provided with this information if they are to make informed decisions on public investments in the transport system.

I should emphasize that there are other serious problem areas that should be addressed by marketing researchers. It should also be understood that this is my personal priority set and not that of the USDA.

Support for Marketing Research

Marketing research does not enjoy a good reputation generally in the College of Agriculture not, for that matter, is it always given approbation by our colleagues in agricultural economics. Over the years, I have been rather puzzled by this reaction and only lately have begun to develop some hypotheses that might explain it.

Among the reasons may be that marketing researchers are forced to work in an arena that is not characterized by the "neatness" of a perfectly competitive environment. Hence, analyses and results have a greater aura of uncertainty associated with them. Related to this is the fact that some areas of marketing research could be characterized as "institutional" in nature and lacks the apparent rigor of other types of research. Yet another reason may be that marketing research tends to measure performance of firms and industries against the context of a competitive model with implicit welfare criteria that assert the "badness" of monopoly power. This often stirs up powerful interest groups who make their feelings known to university administrators.

While these reasons may not be the entire answer, they must have some bearing on the current state of support for marketing research. Another aspect of the lack of support for marketing research relates to the mode of budget formation within the federal and land grant bureaucracies. Quite simply, within the decision making structure, we have few advocacy voices for the kind of work we do. While at present we can do little about this particular state of affairs, there is soemthing we can do. We can bring pressure to bear through professional associations such as FDRS. I would urge the establishment of a standing committee of the Society whose function would be to annually present a research agenda to ESCOP and CSRS and to seek the opportunity to argue this agenda before the budget committees. Further, I would recommend that the agenda be presented to the House and Senate Agriculture Committees either as a communication to the members or as formal testimony before hearings on the Agriculture Bill.

In sum, I believe most of the problems confronting the food industry have to do with economics. I believe that marketing researchers have much to offer to individuals, firms, and society. I believe we need to communicate to research administrators the significance and power of research to enhance performance in the food marketing system and improve consumer welfare.

Let's do it.

FOOTNOTES

[1]Source: Paul Westcott, ERS-USDA.

[2]1981 Handbook of Agricultural Charts, USDA, Agricultural Handbook No. 592.

[3]Agricultural Outlook, ERS, USDA, August 1982.

[4]Ibid.

[5]1981 Handbook of Agricultural Charts.

[6]Polopolus, Leo, "Agricultural Economics Beyond the Farm Gate," AAEA Annual Meetings, Logan, Utah, August 1-4, 1982.

[7]Eddleman, B. R., Lloyd Tergen, and J. C. Purcell, "Productivity in U.S. Food and Agriculture," Paper presented at SAEA Meetings, Orlando, Florida, February 1982.

[8]Polopolus, Leo, "Agricultural Economics Beyond the Farm Gate," Presidential Address, AAEA Meetings, Logan, Utah, August 1-4, 1982.